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The Practical Application of the Rapid Whole Blood Agglutination Test for Pullorum Disease

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WEYBRIDGE

Since the completion of the experimental work on the value of the rapid whole blood test in the eradication of Pullorum disease (Gordon and Brander, 1942), a considerable amount of work has been undertaken in an attempt to design the most suitable equipment for use in the field, and the most satisfactory procedure for carrying out the test. The rapid test has now been approved by the Ministry as the official method of blood testing flocks both in the Accredited Poultry Breeding Scheme and those approved for supplementary rations, and the equipment described has been issued to the veterinary inspectors who are to carry out this testing in the field.

A summary of the literature on the rapid test was included in the original paper by Gordon and Brander and in many of the articles quoted a description of the various types of equipment and procedure is included. The development of the test has resulted in a variety of original and ingenious contrivances; but observations generally have shown that the efficient application of the test lies along certain definite lines. Excellent descriptions of the practical application of the test are given in a leaflet on the use of the Rapid Whole Blood Test for Pullorum Disease issued by the U.S. Department of Agriculture (1939), and the whole subject is concisely dealt with in the U.S. Department of Agriculture's publications on the National Poultry Improvement Plan (1940) and the Conference on the National Poultry Improvement Plan (1939) when clearly defined standards were laid down.

The accuracy of the test depends on three main factors.

1. The use of a carefully prepared and standardised antigen.

2. The employment of a qualified staff of unbiased testers, and in the two above-mentioned schemes the field testing is being carried out by the Ministry's veterinary inspectors.

3. The ratio of blood to antigen which must be accurate within the limit of one part blood to two to three parts antigen.

Broadly, the test is carried out by mixing a measured quantity of blood (0·02 c.c.) with 0·04 c.c. of stained antigen on a plate. A positive reaction is obtained within two minutes, and during this time the birds must be individually held by some method.

The general routine of applying the test in the field may be roughly divided into five distinct operations, *viz.*:—

1. Catching the birds.
2. Taking the blood samples.
3. Making the tests.
4. Confining the birds individually pending the result.
5. Disposing of reactors.

1. Catching the Birds

Various methods are used for this purpose, and it depends on the type of housing as to which is the most suitable. The owner should be notified in advance so that the flock can be kept in the houses on the day of the test. In large houses birds can be driven into one corner behind a hurdle or roll of wire netting, when they can then be easily caught and handed over the wire for testing. Probably the quckest and most satisfactory method is the use of the catching crate. This resembles a small poultry run and is made from strips of wood and wire netting. It is usually about 6 ft. long by 3 ft. wide and 3 ft. high. One end is open and is placed against the pop-hole of the house, and there is a trap-door in the top through which the birds can be easily caught by the poultryman. The birds are driven out of the house through the pop-hole about 20 or 30 at a time. Many large farmers have their own catching crate, but collapsible crates which can be folded for transport are in use. In small houses, particularly breeding pens with 12 to 15 birds each, the most satisfactory method is to place one man inside the house to catch the birds and he in turn hands the birds to a second helper who stands outside the door of the house to hold the bird. Alternatively, 20 to 30 birds can be previously crated, when only two assistants are required.

2. Taking the Blood Sample

(a) Bleeding

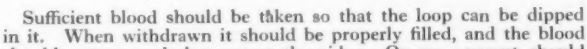
Many American workers advocate taking the blood sample from the comb, and this is done either by puncturing the fleshy part of the base of the comb with a sharp needle, or by cutting off a minute portion of the tip of the comb with a pair of scissors. The main danger in this procedure is that it creates a wound for the possible entrance of fowl pox infection, and in cold weather may lead to frost bite. Furthermore, it is often extremely difficult to get sufficient blood from the comb in young pullets.

The most satisfactory method, in our experience, has been to bleed from the brachial vein where it crosses the "elbow" joint of the wing, as for the serum tube test. The puncture should be made by a quick vertical stab with a triangular-edged "Stylet" type of bleeding needle. Care should be taken that as little subcutaneous haemorrhage as possible occurs, otherwise if a reactor is to be sold immediately for table, the carcase may be rendered unsightly. If insufficient blood is obtained it is advisable to try the other wing, as repeated puncturing often results in the formation of a large haematoma. Cockerels are usually more difficult to bleed, and here recourse may be made to the comb or wattle. The needle should be cleaned after each bird by dipping in a jar of formolised saline or surgical spirit, and then wiped on a piece of lint. Solutions containing phenol in any form should not be used, as this disinfectant has been found to interfere with agglutination.

(b) Taking the Sample

Many instruments are described for taking the blood sample, such as medicine droppers, tooth picks, glass rod, and in some cases simply allowing a drop of blood from the comb to fall on the testing plate. All these methods must be condemned as they do not allow an accurate quantity of blood to be used.

The simplest, quickest and most accurate method of obtaining the required quantity (0·02 c.c.) of blood is by means of a loop of nichrome wire, standard gauge 19, with an internal diameter of 3 mm. This loop is mounted in a double ended bacteriological needle holder, with a metal chuck at either end, the loop fitting in one end and the bleeding needle in the other.



Bleeding Needle and Loop.

Sufficient blood should be taken so that the loop can be dipped in it. When withdrawn it should be properly filled, and the blood should appear to bulge out at the sides. On no account should the operator attempt to scrape blood off the wing and if insufficient blood is obtained a fresh puncture should be made. Speed is also essential as clotting of blood interferes with a satisfactory test.

3. Making the Test

To carry out testing in the field, the following equipment is required:

(*a*) A cabinet giving a level surface and to hold the testing equipment.

(*b*) A white plate on which to mix the antigen and blood.

(*c*) Apparatus for delivering 0·04 c.c. of antigen accurately and quickly.

It was found during our preliminary field work that testing inside the average poultry house is most unsatisfactory, owing to the absence of good light, and the amount of dust and litter in the air. One of the essential features of a satisfactory cabinet, therefore, is that the testing plate can be sheltered from rain and dust, or from wind and strong sun, both of which may cause too rapid drying of the test. The second important essential is a level, steady surface on which the testing plates can be placed, otherwise the tests tend to run together. In most of the cabinets described by American workers the testing plate is heated by various methods such as electric elements or electric bulbs placed under the plate, and run from car batteries. Our findings, however, are in agreement with those of the National Poultry Improvement Plan Conference, that except in very cold weather artificial heat is unnecessary. The ideal temperature at which the test should be carried

out is between 60° and 80° F. and the under surface of the plate should feel cool to the wrist, not warm or cold.

A. *The Cabinet.*—The cabinet and tripod now described were designed to overcome these difficulties. Closed for transport, the cabinet measures 14 in. by 10½ in. by 8 in., and when opened the lid and folding sides form a wind shield under which the testing plates are placed. The lid of the box is glazed, allowing ample light for reading the tests, and a false lid slides over the glass top for protection. In suitable weather the whole top can be removed by means of sliding hinges.

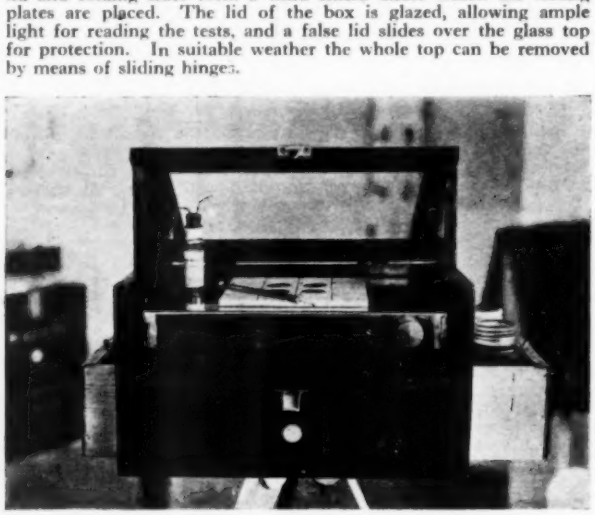


FIG. I.—Photograph of testing cabinet open, showing testing plate, antigen dropper, bleeding needle and loop, and hot water tank.

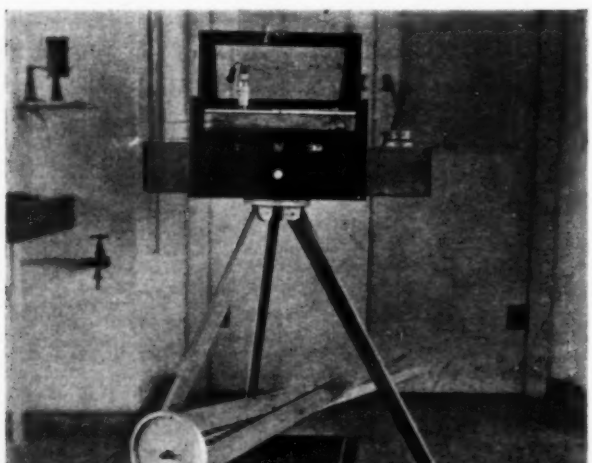


FIG. II.—Testing cabinet assembled on tripod, and in foreground, cabinet closed, tripod, and collapsible metal crate showing the four numbered compartments.

A level surface is difficult to obtain on the rough uneven surface of the average poultry run, and this has been overcome by the use of a tripod. The tripod, which is similar to that used in photography but stouter, is detachable and has a circular central base which screws into a metal socket in the under side of the cabinet. In addition, the cabinet has a drawer at either end in which can be carried the antigen, test plates, bleeding needles, loop, wash bottles, etc.

In very cold weather artificial heat can be supplied by means of a flat, copper water-tank. This is carried in the top part of the box and can be filled with water at the correct temperature (about 80-85° F.), and the test plates placed on top.

B. *Plate.*—Innumerable types of testing plates have been used, plain glass with electric bulbs underneath, plain glass with white paper underneath, or painted white on the under side, white opaque glass and white porcelain. Trials were made with all these various types, shapes and sizes, and the most satisfactory both for reading the tests and for ease of handling and cleansing, was found to be a white, highly glazed household tile, six inches square. The tile is ruled off in 16 squares, each 1½ in. square and numbered consecutively 1 to 16. The value of the highly glazed surface is that it is non-porous and can be easily wiped clean and dried after use. Ordinary warm water and a sponge is all that is necessary for cleaning the plate. A further advantage of a small loose testing plate of this type is that the plate can be picked up and rocked between tests, which helps to hasten the reaction, and if doubtful or borderline reactions occur, the plate can be carried to the best available light. For these reasons, and owing to the difficulty in cleansing, plates which are fixed in the box cannot be recommended.

C. *Antigen Dropper.*—As noted earlier, the accuracy of the test depends, *inter alia*, on the proportions of blood to antigen being within definite limits. The most satisfactory quantity of antigen was found to be 0·04 c.c. Great difficulty was found in obtaining a really satisfactory method of delivering an accurate constant drop of this amount. Various types of pipettes, some with bulb tips, graduated to deliver this amount, were tried, but were found difficult to manipulate accurately, and too slow. A drop bottle, as used in staining, set to deliver a drop of 0·04 c.c., was tried for some time, but air blocks occurred frequently, or the drops came so quickly that they could not be regulated. A further difficulty was that when the bottle required refilling, the drip had to be reset, the only satisfactory method of doing this being by trial and error. The apparatus finally designed for delivering the antigen does not appear to have been described previously, and would appear to be of possible value in other work, where a constant accurate drop is required.

The illustration of the antigen dropper in Fig. 1 is self-explanatory. The inlet and outlet tubes are of stainless steel and in this case the bore of the tip of the outlet is $\frac{1}{32}$ in. and the cross section $\frac{1}{16}$ of an inch. The size of the drop can, of course, be varied by the use of different sized outlet tubes. The speed of the drop depends on the size of the airlet, and the most satisfactory method of controlling this was found to be by means of a rubber bulb with a solid rubber neck, which is fitted to the air inlet. Pressure on the bulb releases one drop at a time. Both inlet and outlet tubes fit through a rubber bung, the holes in which are made with a bleeding needle, and the tubing forced through to give an airtight fit. The bottles in which the antigen is despatched have universal sized necks, so that the antigen dropper can replace the bark cork and be used with any size of bottle.

4. Holding and Identifying the Birds During the Test

As no leg-banding is carried out in the rapid test, it is necessary to restrain the birds while the test is in progress, so that any reactors can immediately be identified.

As in the other parts of the procedure, a variety of methods of restraint have been described and the most popular in U.S.A. would appear to be a folding table on which the birds to be tested are laid, their legs being secured by means of wooden turn buttons.

One of the most satisfactory methods we have used is a row of eight numbered cockerel boxes, each corresponding to a space on the testing plate, the only disadvantage being the moving of the boxes between pens or houses. Similarly, an ordinary poultry crate divided into eight compartments can be used. The quickest method, however, is the use of a large undivided poultry crate holding eight to 12 birds. If a reactor is disclosed then all the birds in the crate must be retested and held individually until the infected bird is detected. This method can, of course, only be recommended for use in a flock known by its previous testing records to contain few if any reactors.

It has been found, however, that one could seldom rely on the breeder possessing either suitable boxes or crates, and it has been necessary to supply each operator with two collapsible crates.

These are made of light metal to facilitate cleansing and disinfection, and each crate consists of four separate compartments numbered 1 to 4 and 5 to 8 to correspond to the squares on the testing plate.

Assembled, the crate measures 29 in. long by 17 in. wide by 11½ in. high, each compartment being 11½ in. by 13½ in. by 8 in. Folded for transport, the crate measures 29 in. by 17 in. by 3 in. and weighs 21½ lb. There is no floor to the crate, so that little soiling by faeces occurs. The lids are self-fastening to prevent birds escaping. The crate can be quickly assembled and is fairly portable. The assembled crate is shown in Fig. 2.

5. Disposal of Reactors

All reactors discovered should be placed in a separate crate until the test is completed. They should not be shut in nest boxes for later collection, as they may be unwittingly released in the interval.

Under the two official schemes reactors must be killed in the presence of the veterinary inspector, though their carcases may subsequently be dressed for table purposes. The veterinary inspector is empowered in certain circumstances (*e.g.* a large number of reactors with no table poultry market at hand) to authorise their removal alive to premises where they will be killed immediately. The tail feathers of reactors moved alive in this way are cut off to make them unsightly and easily identifiable.

Owners of flocks outside the official schemes should treat their reactors in the same manner. On no account should reacting birds be disposed of alive for breeding or egg production.

Procedure in General

The farmer should be notified by the operator at least two or three days before the test is to be carried out so that the birds can be shut in the houses and the necessary labour arranged. The ideal number of assistants is three, one to catch the birds, one to hold the bird while it is being bled, and a third to crate and release the birds and to crate reactors. The minimum number of assistants is two. The testing cabinet should be placed to the windward side of the catching crate, or if the birds are to be caught in the house then the cabinet should preferably be placed behind the door, so that dust and feathers stirred up by the flapping of the birds' wings are not blown on to the plate. The catcher hands the birds to the holder, who grasps the legs and under wing in his left hand with the bird's breast towards his body, and spreads out the upper or right wing in his right hand, when the brachial vein is readily presented to the operator. The operator places four drops of antigen on the first four squares of the testing plate, the vein is punctured and a loop of blood removed and stirred into the drop of antigen by about 10 to 12 revolutions of the loop until the mixture is spread out to the size of a shilling. The bird is then handed to the third assistant, who places it in the compartment of the folding crate corresponding to the number of the test on the testing plate. Between each test the needle and loop are rinsed in formol-saline and wiped on a clean cloth. The next four birds are tested in a similar manner and when the eight tests have been completed the plate is lifted from the box and rocked five or six times and the results read. Any reactors are removed from the holding crate and placed in the reactor crate, and the unaffected birds are released. Each test should be examined at the end of approximately two minutes.

The number of tests which can be carried out in a given time will depend on the number and quality of the assistants, the size of the houses and type of management. With three assistants and fairly large houses containing 50 to 60 birds it is quite possible to complete this number within an hour, and given reasonable favourable conditions 500 to 1,000 tests can be carried out in one day.

Reading the Test

Flocculation of the stained antigen into well-marked clumps with clear interspaces within two minutes denotes an infected bird. In most reactors this reaction occurs very quickly. A fine granularity with clearing throughout the whole mixture, if occurring within two minutes, should also be regarded as positive. A marginal reaction with no clearing of the antigen is negative, while any reaction occurring after two minutes should be ignored. Very occasionally a peculiar reaction is observed which takes the form of a spontaneous reaction on mixing the serum with the antigen, and appears as bright red clumps with no clearing of the test. It does not denote an infected bird and is apparently due to clumping of the red cells, and is easily distinguished from a proper reaction.

Positive and negative reactions are illustrated in Fig. 3.

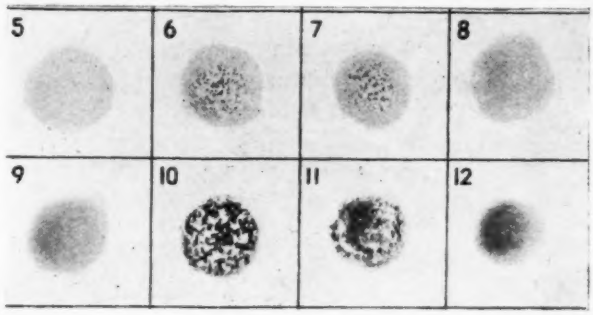


Fig III.—*Illustration of Positive and Negative Reactions.* Squares 5 and 8 contain antigen only, squares 9 and 12 show negative reactions; squares 6 and 7 are positive reactions and squares 10 and 11 strong positive reactions.

Acknowledgment is due to Mr. D. B. Lee, technical assistant at the Ministry's Veterinary Laboratory, for valuable assistance in designing the various parts of the equipment, and to Mr. C. Jones, of Chas. Hearson & Co., for helpful advice in the design of the testing cabinet. The collapsible metal crates were designed by E. G. Morris, Esq., M.R.C.V.S., of the Animal Health Division, in conjunction with Jack Wrennall & Co., Lancashire. The photographs are by Mr. A. Norman, chief technical assistant at the Ministry's Veterinary Laboratory.

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FARMING EFFICIENCY

Professor A. W. Ashby, of the Department of Agricultural Economics, University College of Wales, Aberystwyth, dealt with efficiency and output in agricultural systems when he gave the first of a series of lectures on "Agriculture To-day and To-morrow" at the Royal Society of Arts, Adelphi, last week.

The efficiency of power sources and of implements and machinery, he said, had been rising. It appeared that the input of feed required to produce a gallon of milk had fallen by about one-sixth in this century because of selection of breeds, strains and individual animals and greater knowledge and practices in feeding.

The best measure of the general rise of efficiency was found in the output per man, which had probably risen about 70 per cent. in the last 70 years. From 1925 to 1939 the increase was very rapid. In a test with seven European countries—Great Britain, Germany, France, Denmark, Belgium, the Netherlands, and Switzerland—the position of Great Britain was seventh in the value of gross and net output an acre; first in the value of output per worker, and almost certainly first in the average income per whole-time person engaged. Great Britain was second only to Denmark in gross output per £ annual (rental) values and second only to France on net output per £ annual (rental) values when a standard rate of interest was applied to capital values of land in each country.

* * * * *

We live to-day in a world of planned scarcity, imposed by war. When victory has been won we must move forward into a world of planned abundance, easily attainable in conditions of peace. The 20 years between the two world wars are a humiliating memory, the Thoughtless Twenties and the Workless Thirties. No plans are worth much study unless they are audacious and constructive.—*Mr. Hugh Dalton, the President of the Board of Trade.*

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Kent Horse Breeding Committee is considering steps to encourage heavy horse breeding, and it is probable that a society will be formed for farmers and others interested. The opinion has been expressed at N.F.U. branch meetings in Kent that in the next few years horses will be in great demand.

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Miss Gibbon, Ketton, has NO Male Goat this season, and Refers All Clients to Mr. Clifton.—Advertisement in *Grantham Journal*.

CLINICAL COMMUNICATIONS

Calcification of a Cervical Intervertebral Disc in a Dog*

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ROYAL VETERINARY COLLEGE

A six-year-old male Pekingese dog was submitted for examination with a history of severe pain in the forequarters of about 14 days' duration.

The animal walked with the back arched, the head stretched forward and the neck stiff. He yelled when approached, indicating severe pain and fear of being handled, and it was, in fact, very difficult to get hold of the dog and place him on the table. It was noted that his general condition was poor and that there was a heavy infestation of fleas. The patient was anaesthetised (light anaesthesia) with nembutal to facilitate further examination. When manipulating the neck it moved rigidly and there was a muscular contraction opposing any attempted movements of individual joints, but it was possible with firm manipulation to get some movement.

Radiographs were taken by my colleague, Mr. G. C. Knight. The lateral view showed an irregular dense opacity between the fourth and fifth cervical vertebrae, while the dorso-ventral view did not show the usual black line between these two vertebrae. The patient was destroyed and the neck bones were boiled, when a deposit of calcareous material was found between the bodies of the fourth and fifth cervical vertebrae. The deposit adhered to the posterior end of the fourth bone. This was cut longitudinally but showed no abnormality. (The cut bone and the calcareous material were shown at the meeting.)

DISCUSSION

Major W. H. KIRK said that the condition brought orward by Mr. Holmes and which he had described as being of rare occurrence was, in his experience, he was going to say, common; it was at least relatively common in dogs. Two had been brought to him for radiography in the last two months by different veterinary surgeons, both with paraplegia and these lesions in the intervertebral discs: he did not know the nature of these abnormalities as he had not as yet been able to make a *post-mortem* examination of such a case. The curious point was that all of his cases had occurred in Pekingese spaniels.

Dr. HARE: "Do you mean that these discs are calcified?"

Major KIRK replied that in his opinion that was the case, because one could see them in the radiograph.

Mr. HOLMES said that he had had a number of cases in canine practice of the type referred to by Major Kirk, but he could not say he had ever seen calcification of the intervertebral discs in any of the X-rays.

Dr. T. HARE said that Mr. Holmes's interesting specimen must be the first record of a focus of calcification in the nucleus pulposus of an animal's intervertebral disc. If his (Dr. Hare's) view of the origin and location of the calcified mass was correct, he thought the mass had nothing whatever to do with the symptoms observed in the dog. He believed that in man a focus of calcification (a calculus) developed in the nucleus palposus as a result of postural defect with certain of the intervertebral discs not "cushioning" properly. That condition largely arose from defective muscular control in extending and flexing the spine. He thought that if a large series of spinal radiographs were examined this particular lesion might be found in dogs revealing no clinical evidence of spinal pressure.

Mr. H. STAINTON said that he did not really think that there was anything new about the case presented by Mr. Holmes. Some of them might remember that the late Mr. Henry Gray had spoken of the condition in similar meetings to that: he had also written about it in Wallis Hoare's book, under the heading of "Pachymeningitis." The theory there was that first of all the sensory nerve roots were involved which accounted for the pain—and secondly the motor roots, resulting in paraplegia. Mr. Henry Gray had stated that nodules were formed on these nerve roots in the region of emergence from the spine—and that might fall into line with the calcification of which they were now speaking. In conclusion, he would like to add that the X-ray photographs exhibited by Mr. Holmes were possibly unique.

Dr. HARE observed that the condition to which Mr. Stainton had referred was spondylitis deformans, or arthritis of the spine. So far as he (Dr. Hare) could see there was no evidence of spondylitis in the specimen exhibited or in the *post-mortem* evidence as narrated by Mr. Holmes. The lesion in Mr. Holmes's case appeared to be a calculus in the nucleus pulposus of the cervical intervertebral disc. So far as he was aware, there was no evidence put forward in veterinary literature that a focus of calcification in the nucleus pulposus caused any pressure effect on the cord or nerve roots.

Dr. MCCUNN commented that in the past most people when talking about pachymeningitis would have said that the condition was manifested by a thickening of the membranes round the cord. He would not dispute that it might occur, yet he had never seen any thickening of the meninges of the spinal cord in the dog. Had Mr. Stainton ever seen it?

Mr. STAINTON replied that he had merely pointed out that this train of symptoms could be found described in Wallis Hoare's book under the description of pachymeningitis and that he had actually seen the phenomenon of dogs walking on their front legs in that connection. He could not speak, however, as to the pathology of the condition.

Dr. HARE now rose to say that he had been reminded by Mr. Holmes that the lesion under discussion was mentioned in Hutyra and Marek under the heading of "Calcification of the Intervertebral Discs." If he (Dr. Hare) was in error in his reading he apologised to the meeting, though he remained under the impression that Hutyra and Marek had described calcification of the disc secondary to spondylitis. The main point was that this extremely interesting calculus within the nucleus pulposus required further study. He hoped members would keep a sharp look-out for this calcification of the nucleus pulposus with or without hemiplegia and, secondly, that they would endeavour to take X-ray photographs of a number of control cases to enable them to try to find out if Mr. Holmes's type of lesion existed in many healthy dogs. It was an important problem because medical men had not settled it in man.

Major KIRK said that he could assure Dr. Hare that in the course of the last 14 years he had been radiographing dogs at the rate of three or four a week, and he had never found calcification of the interosseous discs except in cases where the owners had brought the affected animals in with specific lesions.

* Case presented, with exhibits, to the annual general meeting of the Central Veterinary Society held at the Conway Hall, Red Lion Square, W.C.1, October 1st 1942.

Fracture of the Os Penis in an Alsatian Dog

D. LUKE AND F. R. BELL
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Subject.—Alsatian dog, 8 years old.

The dog was brought to the clinic evidencing all the usual symptoms of uraemia. An unusual feature was that on withdrawing the penis from the sheath a jet of blood poured from the urethral orifice and some 30 c.c. of blood was passed before bleeding ceased.

There was no sign of venereal granulomata. A probe was passed and was arrested at the bulbous portion of the glans; palpation of this area revealed what appeared to be some irregularity on the os penis. The character of this irregularity could not be determined with any degree of certainty owing to the firm, dense nature of the glans tissue overlying it. The dog did not resent manipulation of the penis and only showed slight discomfort when catheterisation was attempted. This operation was unsuccessful. During the examination intermittent bleeding occurred from the urethral orifice.

Diagnosis.—From the unchanged appearance of the blood and the closure of the urethra it was obvious that the bleeding was associated with the obstruction in the glans penis. Calculus was considered, but as nothing could be felt or any grating sound appreciated when the probe was passed, and bearing in mind the copious bleeding associated with a palpable irregularity on the os penis and the absence of pain, we were inclined to the view that the lesion was neoplastic.

An X-ray photograph was taken by Dr. J. Scott-Brown (Uganda Medical Service) and revealed a complete fracture of the os penis with erosion of the opposing ends of the bone and with a slight exostosis ventrally.

Destruction was advised.

Post-mortem Examination.—There was no sign of any external injury to the penis or prepuce. The bladder was greatly distended with urine, its epithelium was swollen and oedematous, and the vesicular blood vessels dilated. The kidneys showed congestion. The penis was removed and examined and only very little appreciable movement could be detected between the opposing ends of the bone as the dense tissue of the glans around the gap formed a firm support to the fracture. The os penis was dissected out and what was virtually a false joint was disclosed with the opposing ends of the bone covered with dense fibrous tissue. Maceration of the bone was carried out and this revealed that the ventral bony groove was still patent, but the urethra was almost occluded by the exostosis and the formation of new fibrous tissue.

Discussion.—The case is recorded because of its apparent rarity and in the hope that readers may be able to give some light on the causes of fracture of this bone. The value of X-ray is demonstrated in enabling a precise diagnosis to be made.

Points of interest are:—

1. The cause of the fracture, as no adjacent bone, tissue or organ appeared to have been injured as might have been expected had external violence been the cause of the lesion.

2. The copious bleeding which appeared to have extended over a period of at least 14 days.

3. The absence of bony union and poor attempt at callus formation.

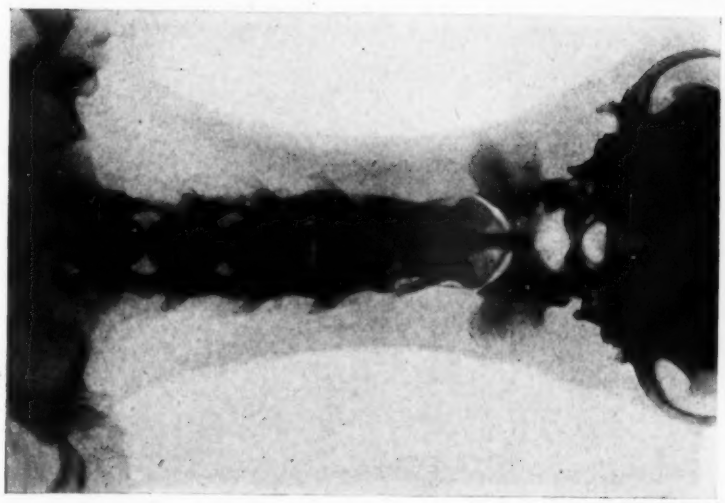
4. Absence of pain on palpation of the lesion.

It appears not unreasonable to suppose that the fracture of the os penis could arise during copulation either from a bite from the bitch or by struggling during the act. The regretted inability to obtain any detailed history, of course, makes this sheer hypothesis. Leaking of urine into the lesion from the damaged urethra would probably hinder repair. The small ventral exostosis shows that some attempt was made at callus formation.

We are grateful to the Director of Veterinary Services, Uganda, for permission to publish this article, and to Mr. S. G. Laws for preparation of the macerated bone, and photographs.

A Foal Show is again being held this year at Milnathort in aid of the Red Cross Funds. Mr. J. F. Watson, M.R.C.V.S., is the Hon. Secretary and Treasurer.

J. W. H. HOLMES: CALCIFICATION OF A CERVICAL INTERVERTEBRAL DISC IN A DOG



D. LUKE AND F. R. BELL: FRACTURE OF THE OS PENIS IN A DOG

ANNOTATION

The Value of Udder Infusion in the Treatment of Streptococcal Mastitis in Cows

A survey of the earlier literature on this subject reveals that a large number of compounds, many of them with proprietary names, have been injected into the cow's udder to test their therapeutic effect on mastitis, but more recently the choice has been limited to members of the acridine dyes which have been shown to possess high bactericidal action on streptococci. A considerable literature has accumulated on this subject, which was initiated by the work carried out about 20 years ago by European investigators. Amongst the first publications is that by Bugge (1924)[2], who reported good results from irrigating the udder in a case of streptococcal mastitis with an acridine derivative called "rivanol" (2-ethoryl, 9-diamino-acridine) which he used in a concentration of 1:1,000 in 5 per cent. salt solution. The use of this compound was followed by a trial, by other workers, of further derivatives of rivanol, such as entozon, trypaflavin, sinflavin and uberasan, but there was no general agreement on the beneficial results attendant on their use.

In 1929, when criticism of acridine infusion therapy reached its peak, Steck, in Switzerland, began a thorough study of this problem and a number of papers appeared between 1931 and 1937 by this author and these have been clearly summarised by Schalm (1941)[10]. Steck compared rivanol, uberasan, entozon and trypaflavin with regard to their lethal effects on *Str. agalactiae* and their irritative properties on the udder tissues. He found that in concentrations having little irritative action, trypaflavin was approximately five times more lethal for these streptococci in fresh secretions obtained from infected cows than either rivanol or entozon and about three times more so than uberasan. In these investigations, Steck evolved more suitable methods of udder infusion, one object of which was to bring a relatively high concentration of trypaflavin into contact with organisms only in the sinus of the gland which was thought to be the principal focus of infection. At the same time, special attention was paid to the reduction both of udder irritation and loss of milk yield to a minimum. The technique of the final method selected was as follows: 200 c.c. of a dilute solution of trypaflavin (1:14,000) was infused into the milked-out quarter, followed by infusion with 200 c.c. of concentrated trypaflavin (1:1,500) in a hypertonic (20 per cent.) sucrose solution. After a short, light massage the fluid was stripped out into a graduated container and immediately afterwards a further 400 c.c. of the concentrated solution was injected and again stripped out. This method was applied in 5000 infected quarters with results which showed that 75 per cent. were sterilised after one treatment and 90 per cent. by two treatments, with consequent negligible loss of milk.

The records of other investigations pursued concurrently with Steck's observations also testify to the efficacy of the acridine compounds, particularly "entozon," a mixture containing rivanol lactate (Seeleman 1933[12], Seeleman and Siemonsen 1933[13], Trautwein *et al.* 1934[18], Seit 1934[14]). In general, these investigators adopted the same procedure for treatment and emphasised that it is important to strip the quarter completely before infusion. A preliminary rinse of the quarter with 100-200 c.c. of entozon solution prepared in warm distilled water was followed by 500-1,500 c.c. of a 1:1,000 to 1:1,500 concentration injected under pressure from a graduated vessel by means of a teat syphon. The fluid was left in lactating udders for three minutes to three hours and in dry udders from 10-24 hours by the different workers. At least two infusions on consecutive days or a week apart were recommended.

In 1938 Stableforth and Scorgie[16] reported their investigations with entozon (1:1,250) and acriflavine (1:10,000), a compound which is stated to be exactly similar to trypaflavin. The two products were administered on two occasions at a week's interval by injecting a solution into the infected quarter, where it was allowed to remain for five minutes in the lactating cow and for 24 hours in the dry cow. Success, as determined by bacteriological tests, was obtained with entozon in 43 out of 60 (71 per cent.) quarters affected with latent mastitis and in 13 out of 37 (35 per cent.) quarters clinically affected, while the corresponding figures for acriflavine were 26 out of 29 (90 per cent.) and 9 out of 12. These results have been largely substantiated by Gerstner (1938)[4], who used these two compounds in the same concentration for treating 37 quarters of cows in full lactation and 39 quarters of those in the dry period. This author found that trypaflavin was not only more effective in clearing the udder of streptococci, but also definitely less irritant, as shown by its effects on milk yield.

Again, Stewart (1938)[17] applying entozon for the treatment of 91 infected cows belonging to two herds, found that *Str. agalactiae* could be eliminated in 70 per cent. by two or preferably three treatments, but that the milk remained yellow-coloured for several days and production lowered for a similar interval. Schalm (1940)[9] also published good results from the use of entozon (1:1,250) in boiled and filtered tap water on 61 infected quarters of 11 lactating and 11 dry cows, where 55 (90 per cent.) were sterilised. To produce this result 20 quarters required one infusion each; 19 quarters, two; ten quarters, three, and six quarters, four infusions given at 7-14 day intervals. The reaction of the udder after infusion varied considerably with different cows, but some degree of induration usually followed, together with disturbance of the milk for 14-21 days. Probably the most extensive investigation on technique of injection and comparison of the effects of varying concentrations of trypaflavin on the udder tissue and milk yield has been carried out recently by Schalm (1941)[10]. The method finally adopted and giving 90 per cent. cures was a modified Steck method and consisted of infusing the udder with trypaflavin (1:1,500) in a 20 per cent. sucrose solution. By using a hypertonic sugar solution, this author found that it was possible to milk out after a lapse of 5-10 minutes a volume of liquid equal to that infused in 98 per cent. of cases, thus demonstrating that the sugar solution was maintained in the duct and cistern spaces and was not absorbed by the tissues.

During the last two years, American investigators have largely centred their attention on the therapeutic value of two other preparations in streptococcal mastitis and the results so far published are at least as satisfactory as those of the acridine compounds, while certain practical advantages attending their use suggest that they will be extensively adopted in the future. One substance, commonly called "gramicidin," first described by Dubos (1939)[3], is a product derived from the growth of a soil micro-organism, *Bacillus brevis*. This substance is an alcohol-soluble-water-insoluble fraction properly named tyrothricin from which two different crystalline products have been separated, one named "tyrocidine," which is bactericidal *in vitro* for both Gram + and − organisms, while the other, gramicidin, is effective only against Gram + organisms *in vivo* as well as *in vitro*. The preparation of gramicidin and its chemical composition have been fully described in a recent review by Allcroft (1942)[1].

The second substance is a chemical preparation referred to as "novoxil",* which is a colloidal suspension of 5 or 10 per cent. of pure oxide of silver in mineral oil. In a preliminary trial of the latter preparation by Weirether *et al.* (1941)[19] its usefulness in the treatment of *Str. agalactiae* mastitis was demonstrated, while confirmatory evidence was presented by Klein *et al.* (1941)[5]. Novoxil in varying concentrations up to 10 per cent. was injected into 67 infected quarters of 23 cows at intervals of 24 hours. The infection was destroyed in 59 quarters, or 88 per cent., usually after receiving one to five injections; swelling of the udder and change in the appearance of the secretion occurred in all cases following the injections, but these changes were only temporary.

Little *et al.* (1941)[7], after a preliminary trial, were the first to develop a technique for the injection of gramicidin and tested its value in the therapy of streptococcal mastitis.

At first they injected gramicidin by infusion of a large volume of liquid in the same way as is used with acridine-product therapy, but later they tried the effect of suspending the substance in a small volume of various kinds of oil. The most satisfactory results were obtained with a heavy mineral oil and the following technique was finally adopted: 2-3 c.c. of a solution of gramicidin in alcohol (containing 40 mg. per c.c.) were diluted with 15 c.c. of distilled water, to which 25 c.c. of sterile mineral oil (liquid petrolatum) were added. The mixture was vigorously shaken in order to secure a uniform emulsion and the whole quantity injected into the treated quarter after milking. The quarter was gently massaged and was milked out eight or nine hours later. Of 32 quarters treated with gramicidin, the streptococci were eliminated from 21 (65 per cent.); in 11 by a single treatment, while 10 required additional treatments. The gramicidin-oil mixture produced only a mild reaction of the udder and the fore milk appeared grossly altered for no more than one or two subsequent milkings, at which time it was possible to repeat the treatment. Concurrently with this trial of gramicidin, Little and his colleagues report on the results of novoxil and acriflavine in a small number of quarters, where the successful results were 58 per cent. and 42 per cent. respectively. The results generally showed that novoxil (10 per cent.) produced more severe damage to the secretory tissue than gramicidin.

In a further trial recorded by Little *et al.* (1941)[8], 28 infected quarters were treated with gramicidin and 23 (82 per cent.) were

* The makers of this preparation are Messrs. E. R. Squibb & Sons, New York.

sterilised; 14 by a single injection of 120 mg., 99 by further treatments. Ten quarters were treated with novoxil and the streptococci were eliminated from five. It was noted in this trial that the quarters of Ayrshire cows were more refractory to treatment than those of other breeds, while the reaction produced was more pronounced.

Schalm (1942)[11] records the comparative therapeutic value of the different compounds which have been discussed in the treatment of infected cows belonging to five herds.

The results which are summarised in the following table were obtained after one to three treatments given at 7-14 day intervals.

Compound.	*Quarters treated.*	*Number cured.*	*% cured.*
Entozon (1:1,250)	61	55	90%
Gramicidin	89	73	82%
Novoxil	34	25	73·5%
Sugar-acriflavine (1:1,500) ...	181	106	58·6%
Acriflavine (1:10,000) ...	41	20	48·7%

Schalm concludes from this trial that the treatment of the dry udder with either novoxil or gramicidin may prove to be the most practical means of eradicating mastitis from dairy herds.

S. J. Edwards.

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VETERINARY SUPPLIES FOR RUSSIA

"Russia has vast reserves of horses," writes Eric Hardy in *The Millgate Monthly*. "The men of her observation posts are mounted upon fine riding horses. Guns and men move up the line with horses. Horses transport the heavy goods at the rear. They evacuate the peasants before the battle. They go on where tank and train find the land impassable.

"The bitter fighting on the Eastern Front has taken a terrible toll of horses. In her need for veterinary help Russia has turned to her Allies, and the friends of the horses, like the Royal Society for the Prevention of Cruelty to Animals in London, have gone to their aid regardless of cost, regardless of funds available, but trusting that animal lovers the world over will back them up because there has been no time to wait in a war of endless action. Large quantities of drugs and medicine have gone to help Russia's horses.

"Thousands of pounds will be spent equipping five new field hospitals for the horses, along with vitally necessary scientific instruments. The Russian cavalry are to have 30 sets of Rontgen veterinary field apparatus, 200 assortments of surgical instruments for the field hospitals, 199 field microscopes, 2,000 veterinary surgical outfits, 3,000 reflectors, 2,000 fully stocked veterinary surgeons' haversacks, 1,000 tracheotomy tubes, 2,000 veterinary phonendoscopes, and several tons of disinfectants.

"Russia began the war with an organised veterinary service, well equipped and splendidly managed. That service still exists, but the terrible weight and ferocity of the German invasion made serious inroads into its resources, and a fund, with Mrs. Winston Churchill as Vice-President, has been launched to provide the money for the new field hospitals that will give first aid to front-line horses and for the large quantities of chemical compounds and drugs now so difficult to obtain in Russia."

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Weekly Wisdom

At every period there have been idealists who have wanted to reform the world, but only at rare moments has the demand for the assertion of new principles and new liberties surged from the bottom of society upwards with such overwhelming force that serious opposition is not possible. Now is one of these moments.—P.E.P. (Political and Economic Planning) Broadsheet No. 178.

IN PARLIAMENT

Future Use of the Land

In the House of Lords on Wednesday of last week, Lord Latham called attention to the reports of the Uthwatt and Scott Committees, and urged the Government to introduce without delay legislation so that the necessary preparatory steps might so far as was practicable be taken now in order that actual planning and reconstruction might be commenced immediately after the cessation of hostilities, and moved for papers.

They all wished to see a prosperous agriculture and the agricultural labourer sharing in that prosperity, but, for good or ill, this country was an industrialised country, and it was too late now, even were it desired, to change it over to a major agricultural country. He would find it difficult to agree with an agriculture bolstered up by tariffs or subsidies. If industry was to be dispersed it must go into the countryside. It would be wrong to seek to put industry in a strait jacket, and to seek to crystallise the existing boundaries between industrial and rural areas. It was, therefore, important that the Government should hasten to resolve that question. It was not possible to muddle along much longer without such a valuation of land as the Scott Committee recommended, and he urged the Government to reflect whether problems of planning, compensation and betterment could be solved unless the solution flowed from the basis of a valuation on a uniform scale.

In the Uthwatt Report there were two major questions of policy—the proposal that development rights of undeveloped land outside urban areas should be acquired by the State on a basis of fair compensation; and that land not within the development rights scheme should be subject to periodic levy on increases in annual site value. He found it difficult to agree that it was sound to incur the cost of restricting all undeveloped land merely in the hope of reducing the cost of the portion which needed to be controlled. The cost might well be more than it would be under ordinary town-planning procedure strengthened by future legislation.

Lord Portal, Minister of Works and Planning, having denied that there had been any undue delay, since the two reports were only published in August and September, and having assured the House that no time was being wasted, recalled that there was legislation on the stocks before these two reports came out, and said that what he wanted to see was how much more could be included as a result of the reports. They could not leave things as they were. He hoped to make a Government statement on machinery shortly. There were anomalies in the countryside regarding electricity and water supplies, but they could be dealt with. The Government would try to show that they were getting on with the various questions involved, and he hoped that in a very short time they would be able to show that they had done some work regarding them.

The Archbishop of York said that a strong central planning authority was needed to avoid confusion. We needed a definite policy on finance, compensation and betterment. The best agricultural land must be reserved for agricultural purposes. The wages of agricultural workers should compare with the wages of those in the towns. There must be houses for those who were working in the country. There should be a strong comprehensive housing programme after the war. The Earl of Radnor said that some of the best development had been under the initiative of the individual landowner, who had taken a chance: a speculative business. It was not the duty of any public body, nor was it desirable to enter into any speculative business on a large scale such as was suggested by the acquisition of development rights. So much of this matter was controversial. It really raised fundamentally the question of land nationalisation. They should not during war-time raise a political controversy of that nature. He begged, therefore, that only the minimum necessary to safeguard the position after the war should be done now. Viscount Samuel said that it was a possibility that when the German system was exposed to serious shock it might collapse. If the Government was then caught all of a heap, with none of those measures passed through Parliament, none of the local authorities ready with their schemes, and a great problem of unemployment following demobilisation and the cessation of war industry, the Government would not be forgiven for the delay and would be utterly discredited. When he read the Report of the Uthwatt Committee he was convinced by their arguments that there was no alternative to their proposals in regard to compensation and betterment. Parliament and the country would be well advised to accept the committee's adjudication. Viscount Bledisloe said that there was need for planning a new Britain. But, having planned, we should not leave it to bureaucracy to carry out the plan. The landowners should be given an opportunity of carrying through, say, a five years' scheme for the optimum utilisation of

the land. If they failed then let the Government take it in hand and see if they could do it better.

The debate was resumed on the following day, when the Government were urged by Lord De La Warr and Lord Balfour of Burleigh to accept the report and carry out its conclusions. Lord Astor declared that unless Parliament agreed to pass essential controversial legislation now there was a danger in the future of Parliamentary congestion and of a sense of frustration and general disgust in the country.

In the words of *The Times*, "the Lord Chancellor concluded the debate with another stone-walling speech on the Government's behalf in which he sought to rebut the charge of procrastination. But the only convincing answer to the charge will be action."

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QUESTIONS

Pig Swill (Sterilisation)

Mr. Higgs asked the Minister of Agriculture whether he is aware of the great loss of livestock in this country due to foot-and-mouth disease and swine fever, which are often caused by swill being fed raw or insufficiently cooked; and will he give further publicity to the imperative necessity of all swill being properly sterilised, both to farmers and to camps, and other places where swill is collected in large quantities?

Mr. Hudson: I am well aware that several recent outbreaks of foot-and-mouth disease and swine fever are attributable to infection carried by swill. I have arranged, as far as possible, for every pig-keeper to be supplied with a new leaflet, a copy of which I am sending to my hon. Friend, setting out in clear and simple terms the dangers inherent in unboiled swill and the precautions that should be taken. The co-operation of all local authorities and Service units is being sought in the distribution of the leaflet to all purchasers of unboiled swill. At the same time I am collaborating with the Waste Food Board in arranging wherever practicable for the sterilisation of swill in central processing plants before distribution to stock-keepers. A very large tonnage is already being dealt with in that way.

Mr. Higgs: Would my right hon. Friend see that war agricultural committees are instructed to see that swill is sterilised, and will he take action against offenders?

Mr. Hudson: I have explained fully the action of my Department.

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Post-War Reconstruction

Mr. Ralph Etherton asked the Paymaster-General whether his Committee on Reconstruction proposes to make an Interim Report on the investigation which they have, so far, effected on post-war reconstruction?

The Paymaster-General (Sir William Jowitt): The Committee on Reconstruction Problems is a Committee of the War Cabinet, to which it reports from time to time. Its proceedings are, of course, like those of all War Cabinet Committees, confidential. As my hon. Friend is aware, it is expected that there will be an early opportunity for me to inform the House of the progress made with the study of reconstruction problems.

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Production: Scientific and Technical Research

Mr. Salt asked the Minister of Production whether, following the appointment of the three scientific advisers to his Ministry, he will ensure that, when new inventions are submitted to the scientific advisers of service and other departments, their conclusions shall be made available to some central co-ordinating body to ensure that any invention worthy of development will be taken up although it may not concern the immediate production needs of the department to which it was submitted?

The Parliamentary Secretary to the Ministry of Production (Mr. Garro Jones): My right hon. Friend has asked me to reply. My right hon. Friend is satisfied that adequate machinery already exists for the purpose which my hon. Friend has in mind. This provides for full exchanges of information between the Supply and Service Departments and ensures close day to day contact at all levels between officers of those Departments engaged on Scientific and Technical Research and Development.

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Agriculture: Education and Research (Organisation)

Colonel Carver asked the Minister of Agriculture what is the nature of the research advisory and educational organisation set up by his Department?

Mr. Hudson: I am sending my hon. and gallant Friend a copy of two leaflets (Technical Advice for Farmers—Form A.705/T.G., and Agricultural Education in England and Wales—Form A.695/T.E.), which set out the nature of the organisation. The Agricultural Improvement Council has been established since the war "to devise methods for seeing that promising results of research are applied as rapidly as possible to the problems of agriculture and are incorporated in ordinary farming practice, and to advise from time to time concerning agricultural problems which appear to require scientific investigation."

My Department's organisation has also been strengthened by the establishment of technical development sub-committees of county war agricultural executive committees to assist the latter in carrying out their responsibilities for securing increased food production.

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Milk (Pasteurisation)

Colonel Carver asked the Minister of Health what steps are to be taken to implement the recommendations of the Committee on Tuberculosis in War-time that the pasteurisation of milk should be extended throughout the country and that where this is not practical all milk consumed by children should be boiled or dried milk provided?

Mr. E. Brown: My Noble Friend, the Minister of Food, with whom I am in close consultation on the subject, is taking all practicable steps to extend pasteurisation. I am in consultation also with my Noble Friend on the best allocation among children of the supplies of dried milk available.

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Stock-rearing (Scottish Uplands)

In the course of a reply to Mr. Snadden, on the subject of Government policy in respect of marginal land cultivation in Scotland,

Mr. Johnston: Assistance will be given towards the cost of carrying out approved operations on marginal land, and for the maintenance of breeding cows on hill and upland grazing.

I have already indicated that, in Scotland, the class of farm which is mainly in need of [economic] assistance of this kind is that which is devoted to stock rearing. The goods and services scheme will not suffice to enable such farms to make the maximum contribution to food production. In the case of the hill sheep farm, where little can be done in the direction of extensive renovation of land under war conditions, the economic difficulties are being met in the meantime by direct subsidy. In addition, however, encouragement has been given to the keeping of cattle on hill grazings by the scheme which has been in operation since May, 1941, for a subsidy of £2 per annum for three years for each breeding cow kept on the hills under certain conditions.

It is proposed now to extend the cattle on hill grazings scheme in two directions, first by allowing for a higher rate of subsidy (up to a limit of £4 in special cases) on the recommendation of the Agricultural Executive Committee, and, secondly, by making the scheme applicable to any upland farm in respect of which the Agricultural Executive Committee would be prepared to offer assistance under the goods and services scheme. With the aid of this grant an upland farmer will be better able to meet his share of any project or operation, including particularly the ploughing of grassland for crops or reseeding, to which he may be directed and thereafter to purchase or rear additional stock.

There is no doubt that the hills and uplands of Scotland are understocked, particularly with cattle, and I hope that the combined effect of the two schemes will be a very material increase in the home-breeding of cattle of suitable types. I have already announced that all restrictions on the breeds of cattle qualifying for the cow subsidy have been removed, but the new scheme will require that the cows themselves should be approved. It would be undesirable to give any assistance to the rearing of inferior stock.

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Pigs (Feeding-Stuffs)

Mr. Hannah asked the Minister of Agriculture whether he realises that the present ration for pig food is hardly sufficient to keep them alive and they cannot be fattened for the market; and will he arrange for a more liberal allowance?

Mr. T. Williams: The pig-keeper is expected to keep only so many pigs as can be properly fed on the ration allowance supplemented by home-grown food and non-rationed feeding-stuffs, including swill.

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Feeding-stuffs (Horses)

Major Kimball asked the Parliamentary Secretary to the Ministry of Food whether he will issue a statement on the subject of feeding-stuffs rations for horses used for domestic driving purposes as the position is not clear in certain areas in the Midlands and has been further obscured by various notices in the Press and statements by the British Broadcasting Corporation?

Mr. Mabane: Rationed feeding-stuffs are not allowed for horses used for domestic riding or driving except in cases of proved necessity, where alternative transport facilities are not available or are

markedly inadequate, or where on account of physical disability public transport services cannot be used. No rations are allowed where the applicant or a member of his household had made a claim, whether successful or not, for a ration of petrol for a private motor car. Forms of application for rations may be obtained at local food offices. Wide publicity has already been given to these facts and there seems to be no occasion for the issue of any further statement at the present time.

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BRITISH ARMY: HORSE-DRAWN TRANSPORT

Mr. HEWLETT asked the Secretary of State for War to what extent, in view of the shortage of petrol, the Army is making use of horse-drawn transport in this country?

THE SECRETARY OF STATE FOR WAR (Sir JAMES GRIGG): All horse-drawn transport available in the Army is being used to save the rubber and petrol of motor vehicles. Instructions were issued in September that animal transport could also be hired for this purpose.

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COAL MINES (HORSES AND PONIES)

Sir R. GOWER asked the Minister of Fuel and Power whether the working hours of horses and ponies in mines have been substantially increased per day or per week as a result of the drive for increased output; whether action has been taken when ponies appear to get out of condition owing to strain or overwork; and whether the ponies get their regular food supplies at their working places "in bye" during the shift as well as a regular supply of clean drinking water?

Mr. T. SMITH: Owing to the more regular working of mines the horses are in some cases having to work more days per week, but not usually more hours per day. The answer to the second and third parts of the Question is "Yes": in the comparatively rare instances where the inspectors find otherwise, appropriate action is taken.

Sir R. GOWER asked the Minister of Fuel and Power the total number of horses and ponies used below ground in mines at June 30th, 1942; the number of mechanical conveyors used at the same date; the percentage of the total output carried by conveyors; the number of portable motor-haulers; and the proportion of the total output handled by them?

Mr. T. SMITH: The information, so far as it is available, is as follows:—

Mines under the Coal Mines Act in Great Britain

Number of horses employed below-ground at June 30th, 1942—26,593.

Number of conveyors in use year ended December 31st, 1941—8,261.

Percentage of coal conveyed in 1941—64 per cent.

Particulars of the number of portable motor-haulers and the proportion of the total output handled by them are not available.

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EVACUATION (ANIMALS, WELFARE)

Lieut.-Commander TUFNELL asked the Home Secretary whether he will, for the purposes of billeting and rationing, regard inspectors who are looking after the welfare of animals as essential workers in districts which may be subjected to compulsory evacuation; and whether, if necessary, he will institute enquiries of chief constables as to the utility of this step?

Mr. H. MORRISON: I have given careful consideration to my hon. Friend's suggestion, but I regret that I do not see my way to adopt it.

AGRICULTURAL ECONOMICS

"No class is more apprehensive of the future than farmers," states *The Scottish Farmer* in a recent issue, and continues: "The truth is that most of these are receiving a satisfactory salary, and no more, for their war production. They are now supplying more than two-thirds of the nation's food. They desire to do even more. They have unsatisfied demands for more and better equipment, drains, buildings, fences, water, machinery, electricity and lime, and would willingly become extensive purchasers now if their wants could be met. The needs of agriculture alone can employ a large section of the population for many years. There should be a large revival of rural craftsmanship. But all hinges again on currency manipulation. If the economics of scarcity is again preached and carried into effect, if the so-called economic crises are accepted as inevitable, if industry demands a flood of cheap overseas food without the State recompensing home production, then the outlook will be black. Without historical justification optimism prevails that such a state of affairs will not be tolerated in the future."

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Dec. 2nd.—Special Meeting of the Southern Counties Division, N.V.M.A., at the Polyglot Hotel, Southampton, 2.30 p.m.

Dec. 9th.—Meeting of the Society of Veterinary Practitioners at York, 2 p.m.

Jan. 5th and 6th, 1943.—First Annual Conference of the Veterinary Students' Association of Great Britain and Eire, at the Royal Veterinary College, Streatley, nr. Reading.

Jan. 16th, 1943.—Meeting of the Society of Women Veterinary Surgeons at Birmingham.

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ARTIFICIAL INSEMINATION: SCOTTISH COMMITTEE APPOINTED

The Agricultural Improvement Council for Scotland has set up a Committee to consider and report on the steps which may be taken to promote and control artificial insemination in Scotland.

The following members have been appointed to the Committee:

Major R. F. Brebner, Highland and Agricultural Society of Scotland (Chairman).
Mr. J. W. Burgess, M.R.C.V.S., Royal (Dick) Veterinary College.
Dr. H. P. Donald, Institute of Animal Genetics.
Dr. G. Dunlop, West of Scotland Agricultural College.
Colonel Sir Arthur Olver, C.B., C.M.G., F.R.C.V.S., Scottish Board of Research in Veterinary Science.
Mr. J. Picken, National Farmers' Union and Chamber of Agriculture for Scotland.
Mr. J. T. Steele, Department of Agriculture for Scotland.
Mr. W. Ness, Department of Agriculture for Scotland, will act as Secretary of the Committee.

At the first meeting of the Committee it was decided to invite the various cattle breed societies to submit their views.

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IMPROVEMENT OF FARM BUILDINGS

Improved layout and design of farm buildngs are the basis of the work of a committee set up by the Minister of Agriculture under the chairmanship of Mr. T. W. Howard, a past President of the Land Agents Society and the agent to the Duke of Northumberland. The other members are:—

Professor L. P. Abercrombie, Mr. William Alexander, Mr. Stanley Chivers, Major A. Douglas, Professor F. L. Engledow, Mr. George Gee, Mr. Edwin Gunn, Mr. Edward Holland-Martin and Mr. W. Holmes.

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PERSONAL

Births.—FORMSTON.—On November 16th, 1942, to Pembleton, wife of Clifford Formston, a son.

OMAND.—On November 16th, 1942, at Ayr Nursing Home, to Netta, wife of James Omand, B.SC., M.R.C.V.S., "Bingafea," Shove Road, Doonfoot, Ayr—a daughter.

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Illness of Mr. H. Tudor Hughes.—We learn, with regret, that Mr. H. Tudor Hughes, B.SC., F.R.C.V.S., of Oswestry, has had to undergo an operation in Brompton Hospital, but our readers will be glad to know that he is making good progress.

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Marriage.—BERRY—CRAFT.—On November 18th, 1942, at Cranleigh Surrey, Alan George Berry, M.R.C.V.S., of Cranleigh, to Dorah Winifred, daughter of Mrs. Charles Craft, of Reading, and niece of John A. Craft, M.R.C.V.S., of Cranleigh.

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We are glad to be able to inform their many friends in the profession that news has been received that Mr. F. W. Withers, M.A., M.R.C.V.S., and his wife are fit and well, though confined in a camp at Bangkok.

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R.C.V.S. OBITUARY

BRODIE, Alexander Malcolm, 600, Tomoana Road, Hastings, New Zealand. Graduated London, July 10th, 1899. Died October 8th, 1942; aged 65 years.

RIDER, James Roland, Capt. late R.A.V.C., 30, Stanhope Road, Darlington. Graduated Edinburgh, July 10th, 1918. Died November 19th, 1942; aged 48 years.

WARDROP, William Henry George, 147, Percy Road, Shepherd's Bush, W.12. Graduated Glasgow, December 17th, 1914. Died November 15th, 1942; aged 61 years.

Capt. J. R. Rider, M.R.C.V.S.

We have to record, with much regret, the death of Capt. J. R. Rider, of Darlington, who passed away at his home on Thursday of last week after a long period of ill-health: his untimely passing, in the prime of life, will be a source of sorrow to the very wide circle of members of the profession who enjoyed his friendship and recognised his worth.

Capt. Rider was not only a practitioner of high standing, but one who was always a staunch practical advocate of the association movement amongst his fellows. The N.V.M.A. claimed his wholehearted support and to it, for a number of years, he gave the valued service which his ability enabled him to do in the capacity of Honorary Secretary of the Association. He was elected to this office, succeeding Mr. John W. McIntosh, at the annual meeting held in Llandudno in 1933. Capt. Rider was also a great source of strength to the North of England Division. A fuller tribute will be published in our next issue.

To the bereaved wife and family, and to his parents, Mr. Joseph W. Rider, M.R.C.V.S., and Mrs. Rider, of Gateshead, we extend our deepest sympathy. The National Veterinary Medical Association and the North of England V.M.A. were represented at the funeral, to which further reference will be made, by Capt. Charles Nicholson, of Morpeth, and Capt. W. Lyle-Stewart, of King's College, Newcastle-on-Tyne, President and Hon. Secretary, respectively, of the North of England Division.

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The late Alexander Malcolm Brodie, M.R.C.V.S.

A Tribute from New Zealand

Alexander Malcolm Brodie passed away at Hastings, Hawke's Bay, New Zealand, on October 8th, 1942, and in his passing New Zealand has lost its most distinguished practitioner.

Qualifying at London in 1899, Brodie was engaged for a few years in the practice associated with the large stud of horses owned by Messrs. Tillings, in the days of the London horse bus, and here, no doubt, was developed the intensive skill which later gained for him a reputation acknowledged from end to end of New Zealand.

On acceptance of an appointment with the New Zealand Farmers' Union, Brodie came to Hawke's Bay, New Zealand, in 1904. Three years later he terminated this appointment and commenced practice at Hastings, Hawke's Bay, at which place he practised for 35 years, until his death.

It can be truly said of Brodie that he loved his profession, and as he was wont to say, it was also his hobby. Briefly his reward came in the recognition by fellow members of Brodie as an ornament to the profession in New Zealand.

His practice was a large one. Located in a district in which were bred some of New Zealand's best racehorses, and in which exist some of the best-known stud farms of the Dominion, it was inevitable that Brodie's services were to be much sought after. His surgical skill was widely recognised and there was a touch of pathos in an event which happened only four days before his death which brought him a ray of pleasure in his last illness, and that was the success in a race of a horse on which he had performed the roaring operation some months previously, his patient lowering the colours of a crack performer. In the diagnosis of lameness Brodie was pre-eminent, whilst in examination for soundness his verdict was final. Always a keen student, Brodie kept well abreast in current veterinary literature, and was always up to the minute in adopting recent developments in both medicine and surgery.

No man enjoyed greater popularity and respect in Hawke's Bay, where his name was a household word, and it is not too much to say that he was beloved by all. Straight as an arrow in every outlook, in all his dealings the soul of honour, Brodie was not concerned with the question of fee when the case involved the treatment of the horse or cow of a small farmer.

His endeavours to elevate the profession in the country of his adoption were instrumental in securing the passing of the Veterinary Surgeons Act in 1926. After the passing of the Act he was a member of the Veterinary Surgeons' Board up to his demise. He took an active part in the formation of the New Zealand Veterinary Association, of which body he was a Past President. As a Captain in the New Zealand Veterinary Corps Brodie saw service with the New Zealand Expeditionary Force to Samoa in the Great War, and he afterwards held the appointment of Assistant Director of Veterinary Services in the Wellington Military District.

A lover of nature, he had a keen admiration for the pastoral beauties of his beloved Hawke's Bay, where his genial smile and endearing personality will be sadly missed. In the passing of Malcolm Brodie those of us who were privileged to claim his friendship feel an irreparable gap. The profession in New Zealand mourns the loss of its ablest practitioner. W. C. B.

Mr. Brodie was honorary veterinarian to the Hawke's Bay Jockey Club, Napier Park Racing Club, Waipukurau Jockey Club, and the Waipawa Racing Club, till it went out of existence recently. He was a life member, both of the Waipukurau Jockey Club and Hawke's Bay Acclimitisation Society. He was a keen supporter of boxing, being for several years President of the Hawkes Bay Boxing Association. Mr. Brodie took an active interest in Freemasonry and was a member of Lodge Heretaunga and Hawkes Bay Rose Croix Chapter. His wife predeceased him a few years ago.

The high esteem in which he was held throughout Hawke's Bay was shown at the funeral at Hastings by the large attendance, representative of owners of bloodstock, farmers, sporting and business interests. The service of the Church of England was conducted by the Rev. W. T. Drake, who also conducted the burial rites of the Masonic Order. A large number of floral tributes were sent by various organisations and friends.

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MINISTRY OF AGRICULTURE NEWS SERVICE

New Move for More Milk

Plan for More Herd Records.—An important new step has been taken to increase milk production, particularly in the winter months. The Ministry of Agriculture, the Milk Marketing Board and the Central Council of Milk Recording Societies are co-operating to launch, on January 1st, a system that will enable thousands of dairy farmers to record the yields of their herds with a minimum of time and trouble. The main purpose is to facilitate the production of more milk in winter and to enable farmers to make the best use of cattle food. Rigid economy in the use of feeding-stuffs cannot be attained unless the yield of individual cows is known.

The plan divides milk recording into two parts, Schemes "A" and "B." The first scheme is for members of existing milk recording societies who keep weekly (even daily) records.

The "B" scheme is for producers new to recording, who will weigh each cow's milk on only one day each month. Members may, of course, record more frequently—once weekly, for example—but this is a matter for the producer's own choice.

While the personnel of the "B" scheme will be farmers who are not already members of a milk recording society, it is hoped that the benefits of their early experience will, after one or two years, encourage them to practise milk recording on a daily basis and qualify for the "A" scheme.

The Milk Marketing Board have undertaken to administer both schemes and they will be advised by a committee representative of the Ministry of Agriculture, the Central Council of Milk Recording Societies, the National Farmers' Union and the Board itself. Financial assistance from the Ministry and the Board is likely to reduce the annual cost to the farmer to not more than 2s. per cow.

Milk recording in this country is practised mainly by pedigree breeders, yet it has long been recognised as the most reliable "pulse" for all commercial dairy farms. It replaces guesswork in the discovery of profitable and unprofitable cows and gives the farmer just that knowledge he must have in feeding each animal according to her yield. Food waste on bad doers in these days of short rations means food denied to cows capable of turning it into more milk.

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FOOT-AND-MOUTH DISEASE

Since our last notification of the occurrence of outbreaks of foot-and-mouth disease the existence of the disease has been confirmed among cattle at Highbridge, Somerset, and Hamilton, Lanarks.

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ARMY VETERINARY SERVICE

Announcement is made in the issue of *The London Gazette* dated November 13th, 1942, that the King has been graciously pleased to confer "The Efficiency Decoration" upon the following officer of the Territorial Army: Maj. A. L. Robertson (T.A.R.O.) (24968).

War Subs. Lt. R. J. H. Dixon (172906) from R.T.R., to be Lt. September 25th, 1942, retaining his present seniority.

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LEGAL NOTES

Swill Prosecution.—In a case recently heard at Taunton, in which William Cooper, a pig-keeper, was summoned for selling unboiled swill without licence from the local authority, for feeding 24 pigs with unboiled swill, and for allowing the pigs to come in contact with the swill, Captain John Fox, Superintendent Inspector of the Ministry of Agriculture and Fisheries, said that most of the

outbreaks of foot-and-mouth disease in Somerset had been traceable to this cause. Since the first outbreak in July there had been 104 in the county.

The Magistrates dismissed the first summons on a submission by Mr. C. B. Pardoe, representing defendant, that the police could not bring the proceedings without authorisation from the local authority who granted the licences and whose duty it was to execute and enforce the Order.

Captain Fox said he saw swill scattered about the defendant's yard and a number of pigs were eating it. There was also a number of bones lying about the yard which had been partly eaten by the pigs. The bones had not been boiled and some of them had semi-raw meat attaching to them. The pigs were loose in the yard and had access to the food. "I saw defendant," Captain Fox continued, "and asked him why he allowed pigs to have access to the food before it had been boiled. He replied that so far as he knew it had been boiled at its origin—a local hospital. I told him the onus rested on him to boil the swill himself, and he then said the bones had fallen out of a trailer in the yard or the pigs may have knocked them out of it. I asked him to pick up the bones, which he did."

He regarded this as a bad case in view of the fact that they had had so much foot-and-mouth disease in the county.

Mr. Pardoe (cross-examining): This man was trying to render a service to the country by keeping pigs and helping to produce food, wasn't he?

Captain Fox: He was likely to cause very serious trouble keeping pigs in such filthy conditions.

Mr. Pardoe said there was no evidence that defendant had directly fed unboiled swill to his pigs, and it was "bad luck" that his pigs got at the food in the trailer.

The Magistrates dismissed the summons for feeding pigs with unboiled swill, but found defendant guilty of allowing 24 pigs to come in contact with the swill. "We want to make it very clear," said Alderman J. C. Lane (Chairman), "that while we recognise the desire and necessity of everybody adding to the food production of the country, the seriousness of foot-and-mouth disease compels us to regard it as extremely necessary that every care should be taken in this matter."

Defendant was fined 5s. per pig, £6 in all, and ordered to pay £2 2s. costs.

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MILK RECORDING FOR ALL PRODUCERS

Under the above heading *The Home Farmer* makes reference to the scheme, outlined elsewhere in this issue, to enable every producer to keep milk records. "It is one of the most important developments in British dairy farming since organised marketing was introduced in 1933 and will be hailed by all progressive farmers as a measure of economy that will bring lasting benefits to the nation, the industry and the individual.

"Milk recording in this country is practised mainly by pedigree breeders, yet it has long been recognised as the most reliable 'pulse' for all commercial dairy farms. It replaces guesswork in the discovery of profitable and unprofitable cows and gives the farmer just that knowledge he must have in feeding each animal according to her yield. Food wasted on bad doers in these days of short rations means food denied to cows capable of turning it into more milk—and a bigger milk cheque.

"*The highest yielding and most economically fed herds in the country are the recorded herds. That is because guesswork is eliminated.*"

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H.M. STATIONERY OFFICE PUBLICATIONS

The undermentioned have been published recently. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office.

	Price net s. d.	*Post free* s. d.
AGRICULTURE AND FISHERIES, MINISTRY OF:		
Leaflet, Advisory, 188. Folding System of Poultry Keeping.	0 1	0 2
Dozen	0 9	0 11
STATUTORY RULES AND ORDERS:		
Therapeutic Substances (Temporary Provisions) Order, October 21st	0 1	0 2

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We have been asked by the Friends of the Hebrew University of Jerusalem to intimate that the Library of that Institution would be grateful to any of our readers who would send on their copies of *The Veterinary Record* after use.

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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N.V.M.A. ANNUAL MEETING AND CONFERENCE

Sir,—The lack of significant correspondence on the proceedings of the 1942 Conference is surprising and somewhat alarming. Does it imply that the general body of members is content with the present organisation of the profession and apathetic as to its future development? If so, it must surely follow that there is a lamentable lack of appreciation of our duties, as a profession, towards our patients and the community as a whole.

Your two earlier correspondents on this subject have clutched at the phrase "Civil Servants" in Dr. Wooldridge's speech and, as a result, they apparently condemn it without offering any alternative other than the *status quo*. We are all aware of the clichés—"bureaucracy," "stifling of individual initiative," etc.—which are so frequently used to stigmatise often with justification, the present organisation of the Civil Service but does not the phrase "civil service" in its truest sense imply something towards which we should all aspire, *i.e.*, the service of the citizen. It is difficult to see how we as a profession can adequately fulfil our obligations towards our fellow men without a fully planned organisation for the prophylaxis and treatment of animal disease. Dr. Wooldridge is to be congratulated upon such a realistic pronouncement of his views for the future organisation of veterinary services in this country. If we are to do more than scratch the surface of animal disease, it can only be through some national scheme co-ordinating fully the activities of the research worker, the laboratories, the practitioner and his clients, which is not immediately dependent upon the finances of the last named.

Planning cannot be isolated. It would be idle to attempt to decide our profession's future without a prior endeavour to form some conception of the social and economic organisation in which we will be called upon to render our professional services. I, personally, have no Utopian illusions about the social order which will follow the war; unlike Sir Stafford Cripps, I do not believe that it is within human capabilities "to establish the kingdom of Heaven on earth," but I do believe that this war signifies the end of another era in civilisation—in the words of Peter Drucker's important book, it is "The End of Economic Man." What type of man will succeed "Economic Man" I do not know, but any attempt to restore him to his tottering pedestal must inevitably end in disaster. It is only through adequate planning of our whole common life with control of individual aspiration to economic domination (which is very different from "stifling initiative") that we can hope to build a just, never mind a perfect, social order.

Controlled co-operative enterprise must be the underlying basis of all post-war reconstruction if we are to avoid further catastrophe in the near future. I submit that we as a profession will be unable to fulfil our obligations and duties to society other than through the medium of a complete "National Animal Health Service."

Yours faithfully,
GEORGE A. WILLIS.

Liverpool.
November 14th, 1942.

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VICTORIA VETERINARY BENEVOLENT FUND

CHRISTMAS GIFTS

Sir,—It has been customary for many years now to send gifts at Christmas to the amount of £1 or £2 to the widows, orphans and others in receipt of a grant from this Fund, and this has been made possible by the generosity of members of the profession who have sent donations for this special purpose. It would be a pity to have to discontinue this practice on account of the war, for the needs of those in receipt of relief from the Fund must be greater than ever owing to the increased cost of living. I hope, therefore, that members will help us again as they have so generously done in the past. Donations for the Christmas Gift Fund should be sent to the Secretary, Dr. F. Bullock, at 18, Victoria Avenue, Harrogate. The total amount received up to December 21st will be distributed among the 40 recipients and it will bring great pleasure to those who through age and infirmity are now practically destitute.

Yours sincerely,
J. W. BRITTLEBANK,
President.